

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/997,933	UENO, HIROAKI	
	<b>Examiner</b>	<b>Art Unit</b>	
	Natalia Figueroa	2651	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment (29 July 2004).
2. ☒ The allowed claim(s) is/are 2,4-8,12 and 24-44.
3. ☒ The drawings filed on 30 November 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                    |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|   | 9. <input type="checkbox"/> Other _____.   |

### **EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Joseph P. Fox (Reg. No. 41,760) on January 12, 2005.

The application has been amended as follows:

RE claim 12, delete "LSI", replace by - large scale integration (LSI) -.

### ***Allowable Subject Matter***

2. Claims 4-8, 12-20 and 24-44 are allowed.
3. The following is an examiner's statement of reasons for allowance:

RE claim 4, the prior art of record, and in particular Baker et al (USPN 5,784,296), fails to teach or suggest a method that wherein said reference signals are the ones obtained cyclically and serially shifting, from an optional bit, the data of a bit-string pattern for magnetically recording the data into said medium by once effecting the magnetization and demagnetization for the same wherein period of time, respectively; and said plural kinds of predetermined bit-string patterns include: a first pattern of bit strings each including a tribit in which the magnetic inversion occurs continuously for three bits in each period of said magnetization and demagnetization; a second pattern of bit strings each including 2T in which the magnetic inversion occurs after an interval of two bits in each period of said magnetization and

Art Unit: 2651

demagnetization; and a third pattern of bit strings including a bit constitution HTS in which the magnetic inversion occurs in a manner that the magnetization occurs in a direction opposite to the direction of magnetization of the record in the medium.

RE claim 8, the prior art of record, and in particular Baker et al (USPN 5,784,296), fails to teach or suggest a method comprising the step of calculating a non-linear transition shift NLTS in the magnetic recording/reproduction from said first predetermined harmonic component and from said second predetermined harmonic component corresponding to each of the to-be-measured signals, wherein said NLTS is measured within an error range of 5%.

RE claims 12, 24, 39 and 42, the prior art of record, and in particular Baker et al (USPN 5,784,296), fails to teach or suggest an LSI and associated apparatus that wherein, when a bit that undergoes the magnetic inversion is denoted by 1, said reference signals are those signals repeating a pattern of a 30-bit string of 100000000000000 100000000000000 in which the magnetic inversion occurs at the 0th bit and at the 15th bit, and said first pattern is a 30-bit string of 111000110100100 111000110000000 in which the magnetic inversion occurs at the 0th, 1st, 2nd, 6th, 7th, 9th, 12th, 15th, 17th and 21st bits and at the 22nd bit.

RE claims 13, 25, 40 and 43, the prior art of record, and in particular Baker et al (USPN 5,784,296), fails to teach or suggest an LSI and associated apparatus that wherein, when a bit that undergoes the magnetic inversion is denoted by 1, said reference signals are those signals repeating a pattern of a 30-bit string of 100000000000000 100000000000000 in which the magnetic inversion occurs at the 0th bit and at the 15th bit, and said second pattern is a 30-bit string of 101000001000000 101000001000000 in which the magnetic inversion occurs at the 0th, 2nd, 8th, 15th and 17th bits and at the 23rd bit.

Art Unit: 2651

RE claims 14, 26, 41 and 44, the prior art of record, and in particular Baker et al (USPN 5,784,296), fails to teach or suggest an LSI and associated apparatus that wherein, when a bit that undergoes the magnetic inversion is denoted by 1, said reference signals are those signals repeating a pattern of a 30-bit string of 100000000000000 100000000000000 in which the magnetic inversion occurs at the 0th bit and at the 15th bit, and said third pattern is a 30-bit string of 101010101000101 010101000000000 in which the magnetic inversion occurs at the 0th, 2nd, 4th, 6th, 8th, 12th, 14th, 16th and 18th bits and at the 20th bit.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents are cited to further show the state of the art with respect to non-linearity in magnetic recording/reproducing.

- a) Fang et al (USPN 6,788,481): Discloses measuring NLTS with GMR heads.
- b) "Magnetic Recording and Reproducing Device" (JP 10-172105): Discloses measuring harmonic components and detecting NLTS quantities.

~~SINH TRAN~~  
SUPERVISORY PATENT EXAMINER

Art Unit: 2651


.6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalia Figueroa whose telephone number is (703) 305-1260.

The examiner can normally be reached on Monday - Thursday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh N. Tran can be reached on (703) 305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NFM  
NFM

  
SINH TRAN  
SUPERVISORY PATENT EXAMINER